

REMARKS

Status of the Claims

Claims 21-29, 33, 34 were pending.

Claims 21-29, 33, 34 were rejected.

By this response, please **amend** claim 21, and add **new** claims 35 - 40.

Rejections

The Examiner rejected claims 21-29 and 33-34 under 35USC102(e) as allegedly being anticipated by Yeh (2005/0135422).

Yeh

Yeh provides an apparatus and method for relaying messages via a wireless medium within a network environment having an access point that provides an access point that provides access to a destination station. The described embodiments provide modifying an ARP query packet by substituting a built-in MAC address for a sender address in an ARP datagram of the ARP query packet and a source address in a MAC header of the ARP query packet and further changing a BSSID in the MAC header of the ARP query packet from the built-in MAC to a MAC address of the access point. Additionally, Yeh teaches modifying an ARP reply packet issued from the destination station by changing a BSSID in a MAC header of the ARP reply packet from the MAC address of the access point to the built-in MAC address.

Independent claim 21 includes:

at least one layer 3 router of the wireless network receiving data packets;

the at least one layer 3 router of the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network.

Independent claim 33 includes:

- the wireless network receiving data packets;
- the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network;
- the wireless network responding to an ARP of the layer 2 network device with the MAC address of the client by referencing a maintained map of IP and MAC addresses of each client device, wherein a source MAC address of the ARP response is a MAC address of a gateway of the wireless network.

Independent claim 34 includes:

- the wireless network receiving data packets;
- the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network;
- the wireless network responding to an ARP of the layer 2 network device with the MAC address of the client by referencing a maintained map of IP and MAC addresses of each client device, wherein the maintained map is a locally maintained anti-ARP database.

Applicants respectfully disagree with the Examiner's rejections for the following reasons:

1. The network of Yeh does not include layer 3 devices. Layer 3 devices have the characteristic that they alter MAC header fields of data packets passing through them. The network of Yeh does not include layer 3 devices. Therefore, there is no reason for the layer 2 devices of the network of Yeh to modify the data packets with the MAC address of the client – the data packets of Yeh already have the MAC address of the client because the MAC address of the data packet is never modified.

2. The network of Yeh does not respond to ARP requests with a MAC address of the client device. The network of Yeh responds to ARP requests with the MAC address of the device (layer 2, not client) that receives the ARP request. Yeh states (lines 21-28 of paragraph 0011) “The modification of the ARP reply packet includes the steps of (i) substituting the hardware address of the first access point for a target hardware address in a ARP datagram of the ARP reply packet and a source hardware address in a MAC header of the ARP reply packet and (ii) changing a set identifier in the MAC header of the ARP reply packet from the hardware address of the first access point to that of the second access point. Nowhere does Yeh suggest responding to ARP requests with the MAC address of the client device – thereby causing the upstream device making the ARP request to perceive the layer 3 network as a layer 2 network.
3. Yeh does not recognize or address the problems being solved by the claimed invention, and does not include the elements needed to solve the problem. The claimed invention allows a layer 3 network that includes layer 3 devices to be perceived by an upstream device as a layer 2 network. As described in applicant’s specification “layer two networks transparently bridge data packets without altering MAC or IP header fields of data packets passing through the layer three devices. The altering of MAC headers of data packets can present problems when interfacing a layer two device with a layer three network.”
4. Given the fact that the network of Yeh does not respond to an ARP of the layer 2 network device with the MAC address of the client, there is absolutely no way Yeh teaches responding to an ARP of the layer 2 device with the MAC address of the client by referencing a maintained map of IP and MAC addresses of each client device, wherein a source MAC address of the ARP response is a MAC address of a gateway of the wireless network. Additionally, there is no way Yeh teaches the wireless network responding to

an ARP of the layer 2 network device with the MAC address of the client by referencing a maintained map of IP and MAC addresses of each client device, wherein the maintained map is a locally maintained anti-ARP database.

Independent claims 21, 33, 34 are patentable over the cited references.

Claims 22-29, 35-40 are directly or indirectly dependent on claims 21, 33, 34. Therefore, claims 22-29, 35-40 are patentable as well. However, the dependent claims 22-29, 35-40 include many additional features which are additionally patentable over the independent claims 21, 33, 34.

Claim 22 includes the feature that the wireless network responds to an ARP of the layer 2 network device with the MAC address of the client. As previously described, the network of Yeh responds to ARP requests with the MAC address of the device (layer 2, not client) that receives the ARP request. Yeh states (lines 21-28 of paragraph 0011).

Claim 23 includes the feature wherein the response is generated by referencing a maintained map of IP and MAC addresses of each client device. Yeh does not maintain a map of IP to MAC address of each client device.

Claim 24 includes the feature wherein a source MAC address of the ARP response is a MAC address of a gateway of the wireless network.

Claim 25 includes the feature wherein the maintained map is a locally maintained anti-ARP database. Yeh does on teach maintenance of an anti-ARP database.

Claim 26 includes the feature wherein for an upstream data packet, the wireless network sets a source MAC address of the data packet to a client MAC address. Yeh does not set sources MAC addresses to the client MAC address.

Claim 27 includes the feature wherein setting a source MAC address includes consulting an ARP database, and extracting a client MAC address that corresponds with the source IP address of the data packets. Yeh does not set source MAC addresses to client MAC addresses, let alone consulting an ARP database to extract the client addresses.

Claim 28 includes features including a gateway inspecting each data packet, detecting a match of a packet IP address with an IP address within a filtering list; and modifying matched packets before forwarding with a corresponding MAC address as specified by the filtering list. Yeh does not teach maintaining a filtering list, let alone detecting a match of a packet IP address with an IP address within the filtering list; and modifying matched packets before forwarding with a corresponding MAC address as specified by the filtering list.

Claim 35 includes the features wherein the wireless network includes a wireless mesh network. The wireless mesh network includes a first layer 3 access node receiving data packets from a client device through a wireless link, a layer 3 gateway receiving the data packets from at least one of the first layer 3 access node and another layer 3 access node through another wireless link. Additionally, the wireless network modifying MAC addresses of the data packets so that the layer 2 network device perceives the wireless network as a layer 2 network includes the layer 3 access node modifying MAC source addresses of the data packets from a MAC address of the client device to a MAC address of the layer 3 access node, and the layer 3 gateway modifying the MAC source addresses of the data packets from a MAC address of at least one of the first layer 3 access node and another layer 3 access node to a MAC address of the client device. Yeh does not teach a wireless mesh network passing through data packets and modifying the MAC source address of the data packet as it travels from one device to another. The gateway modifies the data packet to have a MAC source address of the client device connected to the wireless mesh network. None of these features are taught by Yeh.

Claim 36 includes the features further comprising the layer 3 gateway obtaining the MAC address of the client device, comprising:

consulting an ARP database, determining the MAC address corresponding to a queried IP address.

Claim 37 includes the features wherein the wireless network comprises a distributed network of ARP servers that may query each other and synchronize there address maps to satisfy ARP queries.

Claim 38 includes the features wherein ARP database comprises an address mapping table that is synchronized across multiple gateways of a wireless mesh network.

Claim 39 and claim 40 include the features:

a layer 3 gateway of the network receiving an ARP request on an upstream interface of the layer 3 gateway;

the layer 3 gateway determining whether the IP address in which resolution is being requested by the ARP request matches an interface address of the layer 3 gateway;

if the request does match the interface address, then the layer 3 gateway sending an ARP response with the gateway interface MAC address;

if the request doesn't match the interface address, then determining whether the IP address of the ARP request matches an IP address of a client device as determined from an ARP table;

if the request doesn't match at least one of the interface address and the IP address, then dropping the ARP request packet;

if the request does match at least one of the interface address and the IP address, then the layer 3 gateway constructing an ARP response with the MAC address set to the client device MAC address;

setting a source MAC address of the ARP response to be the client device MAC address.

No new matter has been added by these amendments.

Applicants respectfully suggest that each of the claims presently in the application are distinct over the prior art and that the application is now in condition for allowance. Accordingly, Applicants request that the restriction/election requirement be withdrawn and the claims be allowed.

Respectfully submitted,
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